Resource Monitoring Brief
NPScape

National Park Service
U.S. Department of the Interior

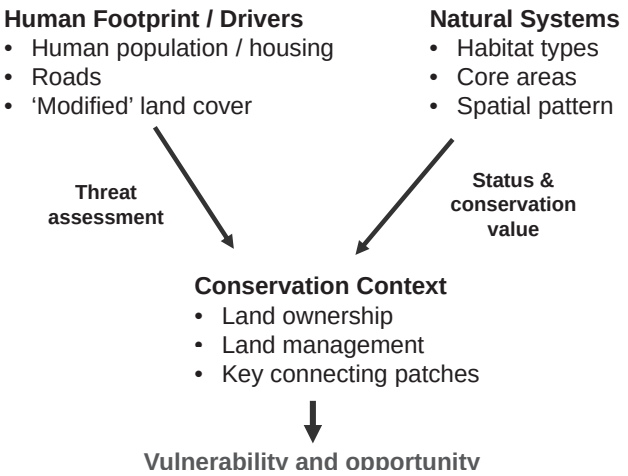
Natural Resource Program Center
Office of Inventory, Monitoring & Evaluation

Monitoring Landscape Dynamics

Background and Measurements

Changes in habitat quality, land use, habitat connectivity and isolation, disburbances, and other landscape-scale factors are profoundly affecting park natural resources. Understanding these changes is important to effectively manage parks today and to plan for the future. The goal of this project is to provide landscape-scale data and evaluations that inform management of parks at local, regional, and national scales.

The NPS landscape monitoring project (NPScape) has identified and is evaluating and reporting a suite of landscape-scale measures for all 270+ park units serviced by the NPS Inventory and Monitoring Program (I&M). NPScape measures address environmental drivers, attributes of the natural system, and the conservation context of NPS lands. Example measurements in each category are illustrated in the diagram below. In aggregate, these measures will contribute to assessments of current status, threats, and conservation vulnerability and opportunity.

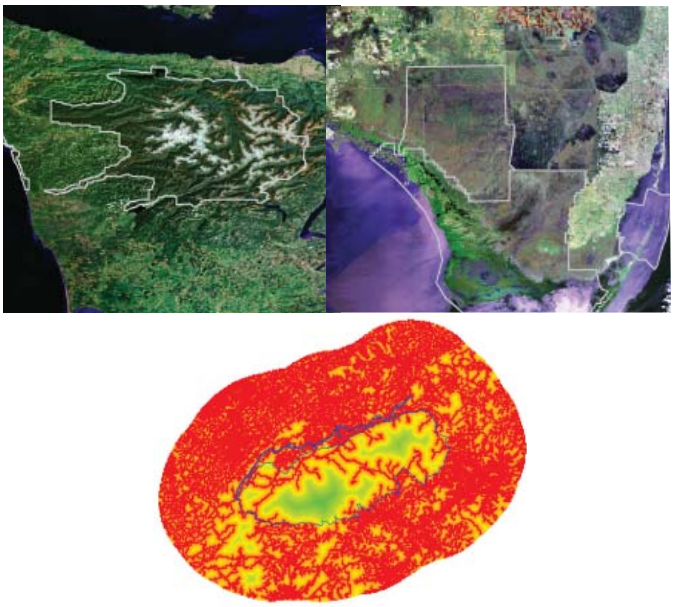


We are evaluating measurements at multiple ecologically relevant scales: a local area within 30 km of park boundaries, and a broad-scale analysis zone that reflects park context, watersheds, and biome boundaries.

Where data permit, we provide analyses of change. Time frames for the analyses and spatial resolutions of products are determined by the availability of suitable data.

Products

The landscape monitoring project will produce reports that include a narrative describing the overall approach and framework, description and justification of each measure, an evaluation of measures for each park, and an overall assessment. They will include specific information for each park covered by the report, and relevant spatial datasets. The reports will provide examples of 'best practice' use of maps, graphs, and tables to communicate the findings.



Park resources can be affected by landscape-scale attributes. The old-growth forests of Olympic National Park (top left; park boundary in light gray) are a contrast to the younger forests on adjacent lands. Intensive agricultural and urban developments affect resouces in southern Florida parks (top right). One index of disturbance is distance to roads. The bottom picture illustrates the uniquely remote (green) areas that remain in Great Smoky Mountains NP.

NPScape is producing documented data sets and methods (SOPs) that can readily be incorporated into I&M protocols. As desired, parks and I&M Networks can use these data and methods to efficiently generate customized products that address Network or park-specific needs.

By evaluating and reporting a consistent set of landscape measures across the NPS system, this project will contribute to local, regional, and national needs to assess and respond to broad-scale and long-term influences on park resources.

Status

Core and ancillary data sets have been acquired, processed, and stored on NPS servers. We have measure description summaries for core measurements, and are actively processing and evaluating results. The first full draft report was developed in early July, 2009, and the NPScape team is moving from a development to a production mode.

More Information

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NPScape Data Sets –Data Available Now

This is an incomplete list – there are frequent acquisitions, and this list does not include many intermediate products or derived measurements

Land Cover

- Enhanced NLCD 1992
- NLCD 1992
- NLCD 2001
- NLCD Change Product
- NLCD Impervious Surface
- NLCD Tree Canopy
- Historic Natural Fire Regime
- LandFire - all products
- Land cover diversity (Simpson's)
- NatureServe Ecological Systems
- GAP/ReGAP
- Land cover characteristics
- Forest fragmentation
- Morphological pattern metrics
- Forest cover types
- Converted and natural landcover

Population

- Nightime lights (1992/93, 2000)
- Populated places
- U.S. cities
- U.S. urban areas
- 1990, 2000 Census, block group
- Population projections by county
- SEDAC census grids
- Housing density (1940-2040)
- Inventoried roadless area
- Agriculture census by county
- Water use by county
- Conservation risk index
- Wildland Urban Interface

Climate

- Precipitation
- Temperature (min/max, variability)
- Growing season days
- NDVI
- Sea surface temperature

Transportation

- Roads (Multiple data sources)
- Railroads (U.S. and Canada)
- National Waterways

Hydrology

- Hydrologic Units (4, 6, 8, 12-digit)
- NHD Medium and high resolution
- Impoundments
- Aquifers
- Ground water climate response network
- Sea ice (North America)

Landform

- DEM - 10, 30, and 120 meter
- Slope and aspect
- Depth to bedrock
- Sand, silt, clay fractions
- Crop capability
- Geology

Boundaries

- Omernick Ecoregions (and CEC)
- Bailey Ecoregions
- Physiographic Provinces
- UNEP Large Marine Ecosystems
- States
- Counties
- NPS Units (with various buffers)
- NPS Vital Sign Networks
- Protected Areas Boundaries
- Federal Lands
- National Wilderness Preservation System
- Continental Divide
- NCDC Climate Divisions
- NEON Domains